

CLAIMS

What is claimed is:

1. A bioconjugate, comprising:

a radioactive, non-ferrous nanoparticle covalently linked to at least one biological vector molecule, wherein said radioactive, non-ferrous nanoparticle is selected from a group consisting of a metal and a metal chalcogenide.

2. The bioconjugate according to claim 1 wherein:

said radioactive, non-ferrous nanoparticle is comprised of a metal selenide.

3. The bioconjugate according to claim 1 wherein:

said radioactive, non-ferrous nanoparticle is comprised of a metal telluride.

4. The bioconjugate according to claim 1 wherein:

said radioactive, non-ferrous nanoparticle is comprised of a bismuth chalcogenide.

5. The bioconjugate according to claim 1 wherein:

said radioactive, non-ferrous nanoparticle emits radiation selected from a group consisting of alpha, beta, and gamma radiation.

6. The bioconjugate according to claim 1 wherein said radioactive, non-ferrous nanoparticle is comprised of:

a core of a first inorganic material; and
at least one shell of at least a second inorganic material.

7. The bioconjugate according to claim 6 wherein:

said radioactive, non-ferrous nanoparticle is comprised of a metal chalcogenide.

8. The bioconjugate according to claim 6 wherein:

said core is radioactive.

9. The bioconjugate according to claim 6 wherein:

said shell is radioactive.

10. The bioconjugate according to claim 6 wherein:

said radioactive, non-ferrous nanoparticle is comprised of a metal.

11. The bioconjugate according to claim 1 wherein said radioactive, non-ferrous nanoparticle is comprised of:

a matrix of a metal chalcogenide; and

a dopant comprised of at least one additional element.

12. The bioconjugate according to claim 11 wherein said dopant is radioactive.

13. The bioconjugate according to claim 11 wherein said dopant is bismuth.

14. The bioconjugate according to claim 1 wherein said radioactive, non-ferrous nanoparticle is comprised of:
- a matrix of metal; and
 - at least one additional alloying element.
15. The bioconjugate according to claim 14 wherein said alloying element is radioactive.
16. The bioconjugate according to claim 14 wherein said alloying element is bismuth.